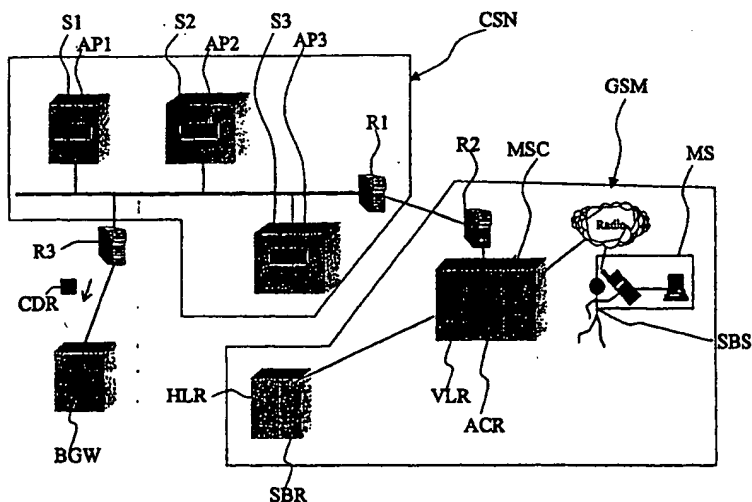


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(54) Title: METHOD AND SYSTEM FOR ELECTRONIC COMMERCE



(57) Abstract

The present invention relates to a method and a system for electronic commerce as well as a method for checking that a buyer has electronically registered a purchase before delivery of a purchased merchandise. A problem is to secure who the buyer (SBS) is without him or her having established a relationship in advance with the seller. The invention solves the problem by letting the seller offer his/her merchandise from an application (AP1-AP3) in an internal packet data network (CSN). The packet data network is connected to a GSM-network. The buyer (SBS) is provided with a mobile terminal (MS), and to activate it, he/she gives a code. A session with the application can be set up only from a mobile terminal, and the application then receives information about the identity of the terminal. With reference to this identity, the application sends an order back to the GSM-network. According to one embodiment, the order means that a payment order shall be registered in a payment node, which is controlled by the operator of the GSM-network, for later charging of the buyer. According to another embodiment, a given account number is checked.

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METHOD AND SYSTEM FOR ELECTRONIC COMMERCE

Technical field

5 The present invention relates to a system and a method for electronic commerce through a data network and a method for checking that a purchase has been registered in a database connected via a data network. The methods and the system are in particular concerned with a data network with connection to a mobile radio network.

10 The state of the art

In electronic commerce, i.e. commerce where economic transactions are carried out between parties via a data network, it is important that the identity of whoever carries out the transaction can be secured.

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A published patent application WO94/11849 tackles the problem of a user, who, from his or her telephone wants to use e.g. a bank service, has to give a code to get access to the service. A solution to the problem is presented through which it becomes possible for a user of a mobile station to be able to utilize the bank service without giving a code. The solution consists of the bank service being realized in an application, which can be reached from an internal telephone network. An entry to the internal telephone network is available for mobile stations included in a GSM network. To activate an included mobile station, it is required that its subscriber gives a code. Setup of a connection to the bank service takes place upon the request of a certain mobile station with an A-number. The A-number is available to the bank service at the setup. The bank service checks if the A-number is registered for a customer, and if so, the bank service is permitted to be utilized through the connection.

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Description of the invention

A problem with the previously known art is that the subscriber, to be able to carry out a purchase, must establish a relation with the seller in advance for the latter to agree to the purchase.

Thus, an object of the present invention is to make purchases possible through a data network via a mobile terminal, where the identity of the buyer can be secured by means of functions in the mobile radio network in which the terminal is included.

The invention is based on the observation that the identity of the buyer can be determined if he/she has a subscription in a mobile radio network for his/her mobile terminal.

The present invention solves the problem by a system comprising a mobile radio network with at least one mobile terminal. The terminal comprises an identification module and requires its subscriber to give a code for activation. The terminal has a certain identity which is sent in encrypted form through radio. The mobile radio network has a database with subscriber information and means to check the identity of the terminal. The system further comprises an internal packet data network connected to the mobile radio network. At least one serving computer connects to the packet data network. In the serving computer there is at least one application for a sales service. The packet data network is controlled by an operator who also controls the mobile radio network. The sales service is available through the packet data network for the mobile terminal only. In the database, subscriber data is read by order of the application, at which the buyer can be identified and charged.

The present invention also solves this problem by a method in which the seller by means of an application in a serving computer offers a piece of merchandise for sale. A buyer connects to the application by means of his/her own mobile terminal.

This is possible due to an internal packet data network connecting the serving com-

puter to a mobile radio network in which the terminal is included. When the buyer connects to the application, the application receives access to the identity of the terminal. The buyer agrees to a purchase via the application. By order of the application, subscriber data is then read from a database in the mobile radio network. The subscriber data is used for identifying the buyer and for making it possible to charge him/her. When reading from the database, the identity of the mobile station is stated, in order to find the correct data. The present invention also solves this problem by a further method, intended to be used when a buyer and a seller physically meet and agree upon a purchase. Instead of paying the seller cash, the buyer registers the purchase by connecting, from his/her own mobile terminal, to an application in a serving computer. This is possible due to an internal packet data network connecting the computer to a mobile radio network in which the terminal is included. The application controls so that the purchase is registered in a charging database. The purchase is registered as an entry with information about merchandise and terminal identity.

15 The application also generates a receipt code by allowing a certain algorithm to act upon any or some of the registered pieces of information about the purchase. The receipt code is sent back to the terminal and the buyer shows it to the seller. At the seller a code is generated as well, in the same manner as in the application. If the two codes correspond, the merchandise is delivered to the buyer. The entry in the charging database is checked against subscriber data in the mobile radio network to find the identity of the buyer, who has a subscription corresponding to the terminal identity. The buyer can then be charged and the seller is paid for the purchase.

According to one embodiment of the first method, a charging database is provided in the system and is controlled by the operator. When the buyer requests to buy a certain merchandise with a certain price, a charging entry is registered in the charging database, stating the price of the merchandise and the identity of the mobile station. The operator fetches, by means of the identity of the mobile station, information from the database to identify and charge the buyer. The operator pays the seller for the merchandise.

According to an alternative embodiment, new subscriber data is registered in the database, viz. the credit card number of the subscriber/buyer. When the buyer requests a purchase, he/she gives his/her credit card number to the application. There-
5 after the application requests that the database check if the credit card number given by the buyer corresponds to a credit card number which is registered in the database with reference to the terminal identity. If the credit card number given by the buyer corresponds to a credit card number which is registered for the terminal identity, the purchase is carried out. The buyer is then charged by a credit card company
10 in which he is a customer.

According to an embodiment, the communication between the terminal and the application takes place through an IP-protocol; a www-browser is used in the terminal and information is transferred in the form of hypertext links.

15 According to an alternative embodiment, a USSD-service (Unstructured Supplementary Service Data) is used within the GSM-network for information transfer. The GSM-network connects to the packet data network via a USSD Gateway, which transforms information in USSD-packets to packet data according to protocols in
20 the packet data network, e.g. an internet protocol, and in the opposite direction transforms received packet data into USSD-format.

One advantage of the present invention is that a user of a mobile terminal, via the same can make purchases via a number of applications (AP1-AP3) without having
25 created a relationship in advance with whoever provides a service realized by the application. The only thing required is that a relationship is maintained between the operator of the mobile radio network and the provider of the service.

A further advantage is that the risk of frauds in the commerce is greatly reduced.
30 The mobile radio network has powerful functions for securing the terminal identity.

The terminal identity is used through the internal packet data network to identify the buyer. Since only mobile terminals have the possibility of connecting to the packet data network, their identities cannot be manipulated. Also credit card numbers that are sent through the packet data network are protected against unauthorized reading since only one operator controls this network and therefore can give a guarantee against reading.

To realize the system according to the invention is cheap since the substantial functions for securing the identity of the subscriber/buyer are already realized in the mobile radio network. By giving the operator of the mobile radio network the control over the internal packet data network as well, an ordinary, rather cheap packet data network can be used.

Today's mobile radio networks have a large number of subscribers, and therefore a system according to the invention has already from the start a large amount of potential customers.

The invention will now be described closer with the aid of preferred embodiments and with reference to the attached drawing.

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Description of the figures

Figure 1 is a view of nodes in a system according to the invention.

25 Figure 2 is a view of nodes in an alternative system according to the invention.

Preferred embodiments

Figure 1 shows a system for electronic commerce. The system comprises a GSM-network GSM and an internal packet data network CSN, which constitutes an elec-

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tronic market. The packet data network CSN in Figure 1 comprises three serving computers S1-S3, a router R1 and links therebetween. In each of the serving computers S1-S3 there is an application AP1-AP3 for sales of merchandise. The pieces of merchandise are offered by a service provider SP which also takes care of the application AP1-AP3.

The GSM-network GSM connects to the packet data network CSN by means of a second router R2 to the first router R1 of the packet data network CSN. The GSM-network GSM also comprises a switchboard MSC with connections to the second router R2, to a Home Location Register HLR and via radio to at least one mobile terminal MS. In this example, the mobile terminal MS comprises a traditional mobile station and a personal computer with a connection therebetween.

Apart from the packet data network CSN and the GSM-network GSM, the system also comprises a charging database BGW, which connects to the internal packet data network CSN via a third router R3. The charging database BGW, the GSM-network GSM and the packet data network CSN, besides the applications AP1-AP3, are controlled by an operator.

The applications AP1-AP3 offers sales by means of hypertext pages. The mobile terminal MS is provided with a www-browser.

The mobile terminal MS belongs to and is used by a subscriber SBS. In the terminal MS, there is a SIM-card, i.e. a subscriber identity module, to which a subscription in the GSM-network GSM corresponds and which states the identity of the terminal MS.

To activate (idle-mode) the terminal MS, it is required that the subscriber SBS gives a PIN-code. When this is done, signalling with the GSM-network GSM commences

to register that the terminal MS is active and where it is located. At the signalling, the identity of the terminal MS is sent in encrypted form through the radio link.

When the terminal MS is registered, a connection to the router R2 of the GSM-
5 network GSM is set up on the request of the subscriber SBS. The terminal MS is assigned a temporary IP-address, which is registered in an access database ACR in connection with the switchboard MSC. By means of the www-browser of the terminal MS, the subscriber SBS then requests a hypertext page from a first application out of the applications AP1. In this example the application AP1 is owned by a
10 service provider which is a travel agency and which offers travel arrangements for sale, through the application AP1. Information on and prices of the travel arrangements are available on the hypertext page which is presented to the subscriber SBS. The subscriber SBS buys one of the travel arrangements by using a hypertext link, which sends information back to the first application AP1. Information, which the
15 subscriber SBS actively supplies by pressing a button or filling a text entry window on the hypertext page, states that a certain travel arrangement is desired to be purchased for a fixed price. No information about who buys the travel arrangement is stated. The information is sent to the first application AP1 together with the temporary IP-address of the terminal MS.

20

When the first application AP1 has received information from the subscriber SBS that a certain purchase is desired, the application AP1 sends a charging entry CDR to the charging database BGW. The charging entry CDR comprises merchandise identity, price, time information and the temporary IP-address and is registered in
25 the charging database BGW.

30

In the access database ACR in connection with the switchboard MSC, an entry is registered at the setup to the packet data network CSN, which entry comprises temporary IP-address, terminal identity and the point of time for use of the temporary IP-address.

In connection with the GSM-network there is a subscriber database SBR containing name and address of every subscriber in the GSM-network. The subscriber database SBR can be separate or constitute a part of an existing node in the GSM-network. In
5 the continued presentation it is assumed that the subscriber database SBR is integrated in a home location register HLR.

The operator regularly runs the information in the charging database BGW, the access database ACR and the subscriber database SBR together, to connect the
10 charging entry CDR in the charging database BGW with a certain subscription and to identify the buyer. From the access database ACR the identity of the terminal is obtained in the form of IMSI or MSISDN and with reference to any of these terminal identities, the name and charging address of the subscriber SBS is obtained from the subscriber database SBR. Name and address are reported to the service provider,
15 in this case the travel agency, which thereafter sends tickets to the address registered with the operator.

The subscriber SBS is charged by the operator with the invoice for the subscription of the GSM-network. The operator pays the travel agency for the purchase of the
20 travel arrangement.

The advantage of the above described method is that the identity of the buyer/subscriber SBS can be secured thanks to the identity checks that already are built-in in the GSM-network.

25 The operator controls the internal packet data network CSN and allows mobile terminals MS in the GSM-network only, to connect to the packet data network CSN. The reason for this is to make manipulation of temporary IP-addresses, which are reported to a receiving application AP1-AP3, more difficult. The applications AP1-
30 AP3 are controlled by the respective service provider. However, the boundary for

the applications AP1-AP3 against the packet data network CSN is controlled by the operator in order to prevent manipulation of data. At activation of the terminal MS, the visit database VLR of the switchboard MSC obtains subscriber data from the home location register HLR. According to a advantageous embodiment, these subscriber data are provided with information on whether or not it is permitted for the terminal MS to use the applications AP1-AP3 in the packet data network CSN. If it is not permitted, the switchboard MSC prevents a setup of a connection with the router R2 of the GSM-network. Thereby, use of the applications AP1-AP3 is prevented.

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In a GSM-network with many switchboards MSC, preferably only one of the switchboards MSC is connected to the second router R2 for connection to the packet data network CSN. Only the switchboard MSC with connection to the router R2 is provided with the access database ACR.

15

Alternatively to, as has been described above, running the information in the charging database BGW and the access database ACR together afterwards, in order to find IMSI or MSISDN corresponding to a certain temporary IP-address, the first application AP1 makes a direct inquiry to the access database ACR. By referring to the temporary IP-address, the first application AP1 is informed about the identity of the mobile station in the form of IMSI or MSISDN. When the application AP1 thereafter registers the purchase in the charging node BGW, the identity of the terminal MS is also registered in the form of IMSI or MSISDN. The name and address of the subscriber SBS is thereafter read from the subscriber database SBR.

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Alternatively to the architecture shown in Figure 1, the GSM-network GSM can be formed to support a GPRS-service (General Packet Data Service). GPRS is a service for delivery of packet data. According to GPRS the terminal has a fixed IP-address. The subscriber database SBR is modified so that subscriber data can be found with reference to the IP-address of the terminal (MS).

30

In Figure 2, the nodes in an alternative system for electronic commerce are shown. As well as the system in Figure 1, this system comprises an internal packet data network CSN, a GSM-network GSM as well as a charging node BGW. A difference compared to the system in Figure 1 is that information between the terminal MS and the application AP1 within the GSM-network is delivered by a USSD-service. Thereby the terminal MS does not need to be equipped with a www-browser. Data from the terminal is sent with/by the USSD-service via the switchboard MSC, the home location register HLR to a USSD Gateway USSD-GW which connects to the packet data network CSN. In the USSD Gateway USSD-GW the data is transformed to fit an internet protocol and is transferred via links in the packet data network to the receiving first application. Data transmission from the first application AP1 to the terminal MS runs in the opposite direction through the same nodes. In each data packet which is transferred by USSD and internet protocol to the first application AP1, its address is stated, as well as the identity and the return address of the terminal MS. The identity of the terminal is stated by its MSISDN (Mobile Station ISDN number) or its IMSI (International Mobile Subscriber Identity).

A further difference in Figure 2 compared to Figure 1 is that a second subscriber database SCR connects to the packet data network CSN via the third router R3. In the second subscriber database SCR, there are entries registered for all subscribers with name and address. A subscriber entry is found with reference to IMSI or MSISDN. The travel agency with the first application AP1 sends an inquiry to the subscriber database SCR and receives thereafter information about the name and address of the buyer SBS. This information is later used for the delivery. As an alternative, with the aid of the name and address, the travel agency itself charges the buyer SBS, instead of letting the operator handle it through the telephone invoice.

The second subscriber database SCR can also be used in Figure 1, for the application to be able to find the identity of the buyer SBS, with the aid of the former, pro-

vided that the GPRS-service and thereby fixed IP-addresses are used. The subscriber database SCR is in that case arranged so that subscriber entries will be found with the aid of the corresponding IP-address.

5 As an alternative to charging via the charging database BGW of the operator, an account number at a credit card company is used for charging the buyer/subscriber SBS. In the home location register HLR, an account number has been registered in advance, which the subscriber has the right to use. When the subscriber in this case requests to buy the travel arrangement, he states his credit card number as well as an
10 address to which tickets are to be delivered. The application thereafter sends an inquiry via the USSD Gateway to the HLR whether or not the stated account number may be used from the terminal MS. The identity of the terminal MS is stated in the inquiry. If the stated credit card number corresponds to the earlier registered one in the home location register HLR, a confirmation is sent back to the application AP1
15 that the credit card number can be used. The tickets are thereafter delivered to the stated address. The buyer/subscriber SBS is thereafter charged in a previously known manner via a credit card company, which has issued the credit card number.

The registration of the credit card number in the home location register HLR is
20 made by the operator after the credit card company and the subscriber have approved to this being done.

A further embodiment of the invention is intended for use when the buyer SBS and a seller physically meet and agree upon a purchase. Instead of paying the seller cash,
25 the buyer connects to a second application AP2 from his/her mobile terminal MS. The second application AP2 offers a payment service. By order of the second application AP2, the purchase is registered in the charging database BGW in a manner described above. The buyer will later be charged and the seller paid in a similar manner to that of a credit card purchase. In order for the seller to deliver the merchandise, the buyer has to show a receipt showing that the purchase has been regis-
30

tered. The receipt is generated and its correctness is checked by the seller according to the following.

5 From the terminal MS, merchandise, price and seller are sent to the second application AP2. The application AP2 sends these data as well as point of time and terminal identity to the charging node BGW for registration. The application AP2 also generates a receipt code by using a certain algorithm on any or some pieces of information chosen out of the registered pieces of information. The receipt code is sent back to the terminal MS.

10

The seller also has access to the algorithm and knowledge about which information it is to act upon. The seller also derives a code in the same manner as the application AP2. Preferably, the seller uses a computer for this.

15 The receipt code obtained in the terminal MS is shown to the seller, and if it corresponds to the code which has been derived at the seller, he/she knows that the purchase has been registered for later payment. The seller thereafter delivers the merchandise.

20 The receipt code is presented by the terminal, for example with bar code. The bar code is read by the seller via a bar code reader and is transferred to the seller's computer for comparison with the code generated at the seller.

25 In the embodiment described in connection with Figure 1 above, a www-browser in the terminal MS is used for ordering the merchandise, and the purchase is registered in a charging node BGW. Of course, a credit card may instead be used for charging, as well as the embodiment described in connection with Figure 2. Likewise, the system shown in Figure 2 can have a charging node BGW with the same function as the one described in connection with Figure 1.

30

For lack of a better word, merchandise if here used for all types of merchandise which are obtained in exchange for payment, also services.

5 The invention is, of course, not limited to the embodiments described above and shown in the drawing, but can be modified within the scope of the attached claims.

Claims

1. A method for identification of a buyer (SBS) in electronic commerce, where a piece of merchandise can be offered by means of an application (AP1) in a
5 serving computer (S1-S3) connected to an internal data network (CSN), whereby public access to said data network (CSN) is possible only for mobile terminals (MS) in a mobile radio network (GSM) and whereby, in connection with the mobile radio network (GSM), there is a subscriber database (HLR,CSR,SBR,ACR) with subscriber information about included subscribers,
10 comprising the steps:
 - activation of a first terminal (MS) out of said terminals, with a subscription in the name of the buyer (SBS), whereby the buyer (SBS) states a code corresponding to the subscription and whereby signalling is carried out for registration and whereby a first identity for said terminal is sent in encrypted form;
 - 15 - connection of a session between said first terminal (MS) and said application (AP1) upon the buyer's (SBS) request, whereby a second identity for said terminal is given to said application (AP1);
 - reading of subscriber information out of said subscriber database (HLR,CSR,SBR,ACR) by order of said application (AP1) and with a statement of said second identity, whereby information is obtained for charging the buyer.
 - 20
2. A method according to claim 1, wherein said application (AP1) gives an order to said reading by sending a charging entry (CDR), containing said second identity and information about said merchandise, to said charging database (BGW),
25 where said charging entry (CDR) is registered in order to enable an operator of said mobile radio system (GSM) to charge the buyer (SBS) and pay a seller of said merchandise.
3. A method according to claim 1, wherein a first credit card number has been registered in said database (HLR,CSR,SBR,ACR), and the buyer (SBS) gives a sec-
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ond credit card number to said application (AP1), after which, with reference to said identity, said first credit card number from said subscriber database (HLR,CSR, SBR,ACR) is read, upon request of said application, whereby the purchase is carried out upon correspondence between the first and the second credit card numbers.

5

4. A method according to any of the preceding claims, wherein said first terminal (MS) is provided with a www-browser, and information between the terminal (MS) and said application (AP1) is transferred in accordance with an internet protocol.

10

5. A method according to any of claims 1-3, wherein the buyer (SBS) requests said connection by sending a USSD-message via said database (HLR) to said application (AP1).

15

6. A method according to claim 1, wherein said subscriber database (HLR,CSR,SBR, ACR) is divided into an access database (ACR) from which the identity of the mobile station is fetched in the form of IMSI or MSISDN by reference to a temporary IP-address for the terminal at the purchase, and a subscriber database from which information about the buyer's name and address is fetched by reference to said IMSI or MSISDN.

20

7. A method according to claim 1, wherein said first identity is IMSI or TMSI, and said second identity is a temporary IP-address, a permanent IP-address, MSISDN or IMSI.

25

8. A system for electronic commerce comprising an internal packet data network (CSN) under the control of an operator, at least one serving computer (S1-S3) connected to the packet data network (CSN),

30

at least one application (AP1-AP3) in said computer for a sales service,
characterized by

a mobile radio network (GSM), controlled by the operator, connected to the data network (CSN) and in itself comprising at least one mobile terminal (MS) belonging to a respective subscriber (SBS), means for, in an encrypted manner, checking the identity of the terminal (MS) at activation, and a database (SBR,SCR,ACR) containing subscriber data connected to the identity of the terminal (MS), and whereby said terminal (MS) comprises an identity module and requires a code from said subscriber for activation,

means for setting up, upon the request from said subscriber (SBS), a session with said application (AP1-AP3) to carry out a purchase, whereby said terminal identity is given for said application (AP1-AP3), and

means for, upon the request from said application (AP1-AP3), reading subscriber data for said terminal identity, and based on these data charge said subscriber (SBS).

9. A system according to claim 8, comprising a charging database (BGW), connected to the packet data network (CSN), and with means for, upon order from said application (AP1-AP3), registering an entry with the amount for payment and said terminal identity for charging said subscriber (SBS).

10. A system according to claim 8, whereby said database (SBR,SCR,ACR) comprises a first credit card number, which corresponds to said terminal identity, and whereby the mobile radio network (GSM) also comprises means for, upon inquiry from said application (AP1-AP3), stating said terminal identity, reading a second credit card number and delivering an answer depending on the correspondence between said first and second credit card numbers.

11. A system according to any of claims 8-10, whereby the mobile radio network (GSM) connects to the packet data network (CSN) via a router (R2), whereby an

IP-protocol is provided for information transfer between the terminal and said application, and the terminal is provided with a www-browser for presentation of and input of information from and to said application (AP1-AP3).

- 5 12. A system according to any of claims 8-10, whereby the radio mobile network (GSM) connects to the packet data network (CSN) via a USSD Gateway (USSD-GW), and information between said application (AP1-AP3) and said terminal (MS) is transferred by the service USSD.
- 10 13. A system according to any of claims 8-10, whereby said mobile radio network (GSM) is a GSM-network, and said code is a PIN-code which is controlled by a SIM-card in said first terminal (MS).
- 15 14. A method for checking that a buyer (SBS) has carried out an electronic registration of a purchase for completion of the purchase, wherein the buyer has a mobile terminal (MS) with subscription in a mobile radio network (GSM), which has subscriber data concerning the subscription registered, comprising the steps:
- 20 - agreement about a purchase of a piece of merchandise at a certain price and with a certain merchandise identity between the buyer (SBS) and a seller;
- activation of said terminal (MS), whereby the buyer (SBS) gives a terminal code;
- signalling for identification of said terminal, whereby the identity of the terminal is sent in encrypted form;
- 25 - connection of a session between said terminal (MS) and an application (AP2) upon the buyer's (SBS) request, whereby said identity is given to the application (AP2);
- transfer of information about merchandise identity, price, seller and point of time from said terminal (MS) to the application (AP2);
- registration of said terminal identity, merchandise identity and price in a charging node (BGW) upon the order from the application (AP2);
- 30

- generation of a first receipt code by letting a certain algorithm act on at least one of said pieces of information: merchandise identity, price, seller and point of time;
- transfer of the first receipt code to said terminal (MS);
- 5 - generation, at the seller, of a second code in the same way as the receipt code is generated;
- presentation of the receipt code to the seller, whereby the merchandise is delivered upon correspondence between the receipt code and the second code.

1/2

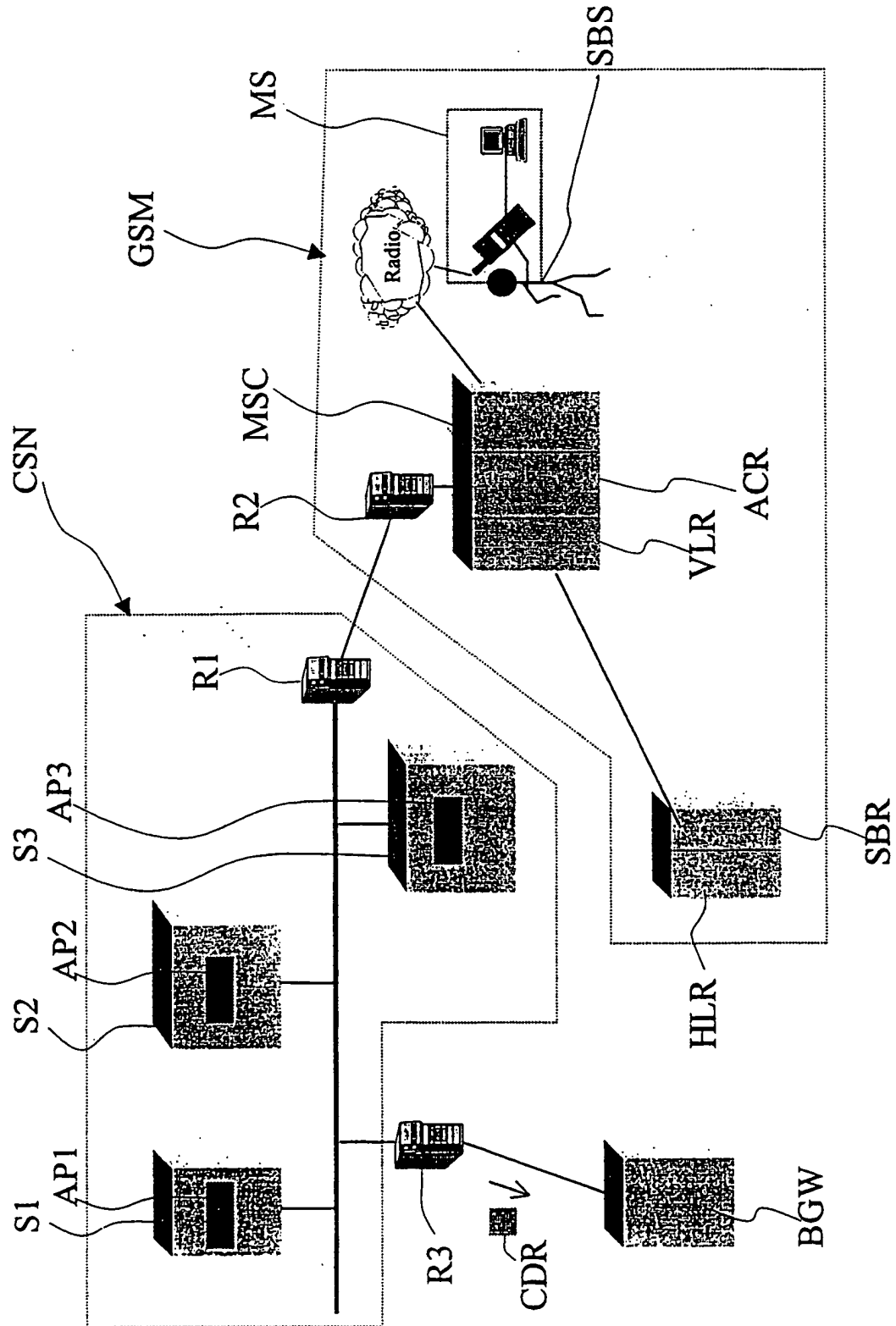


Fig. 1

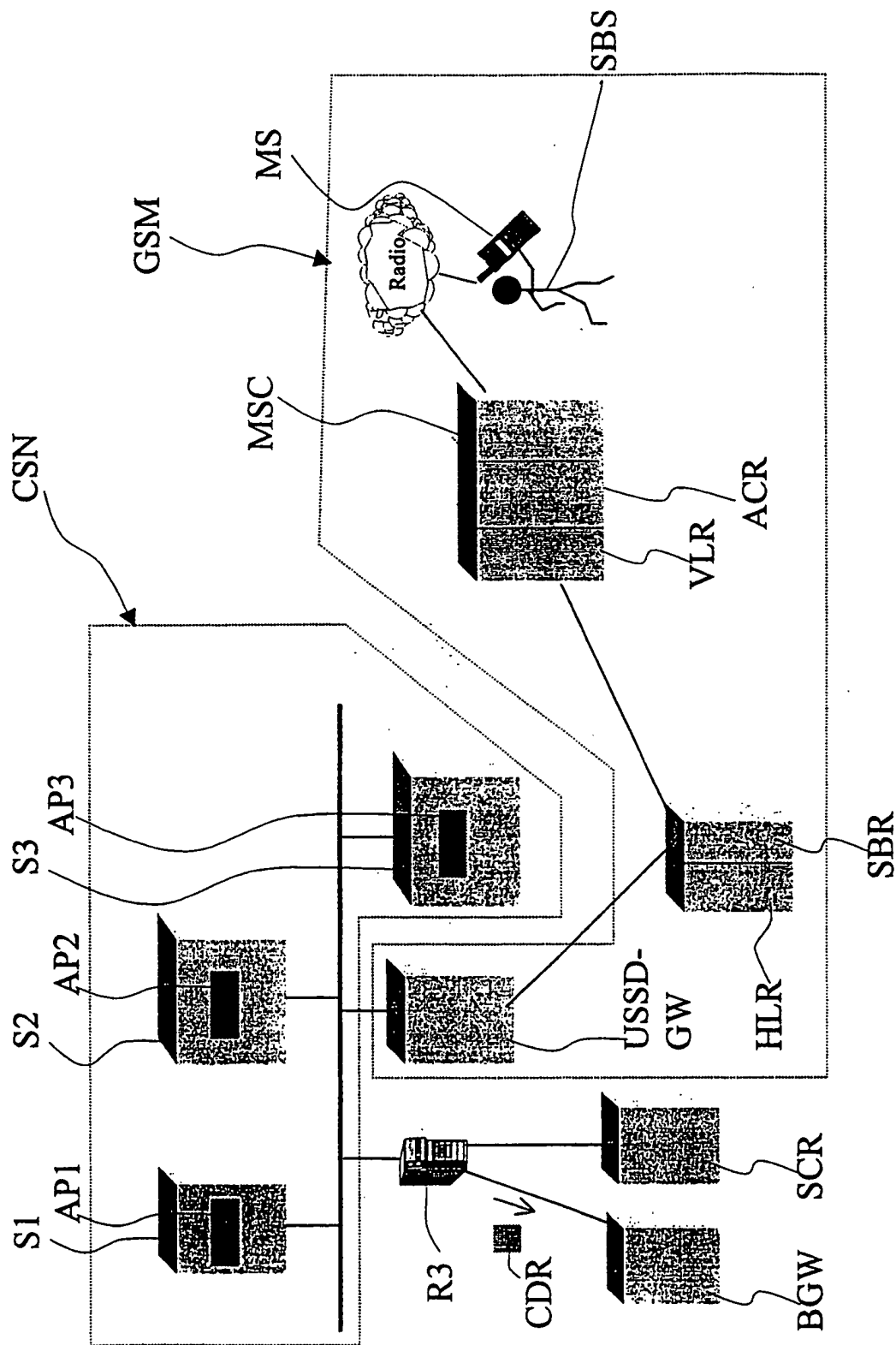


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00375

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 9/32, G06F 17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0785534 A1 (KONINKLIJKE PTT NEDERLAND N.V.), 23 July 1997 (23.07.97), see the whole document --	1-14
A	WO 9837663 A1 (POSTGIROT BANK AB (PUBL)), 27 August 1998 (27.08.98), see the whole document --	1-14
A	WO 9625828 A1 (NOKIA MOBILE PHONES LTD.), 22 August 1996 (22.08.96), figure 4a, abstract --	1-14
A	EP 0708547 A2 (AT&T CORP.), 24 April 1996 (24.04.96), figures 2-6, abstract --	1-14

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

28 July 2000

Date of mailing of the international search report

02 -08- 2000

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/00375

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 9411849 A1 (VATANEN, HARRI, TAPANI), 26 May 1994 (26.05.94), cited in the application -- -----	1-14

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/12/99

International application No.

PCT/SE 00/00375

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